

**REMARKS**

Claims 1-5 and 8-18 are pending in this application. By this Amendment, claims 12-18 are added. The amendments introduce no new matter because they are supported by at least page 8, lines 9-19; page 11, line 16 - page 12, line 10; and/or page 12, lines 19-21 . Claims 6 and 7 are canceled without prejudice to, or disclaimer of, the subject matter recited in those claims. Reconsideration of the application based on the above amendments and the following remarks is respectfully requested.

Applicants appreciate the courtesies shown to Applicants' representatives by Examiners Nguyen and Ngo in the March 22, 2006 personal interview. Applicants' separate record of the substance of the interview is incorporated into the following remarks.

The Office Action, in paragraph 1, rejects claims 8-11 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,511,591 to Abe (hereinafter "Abe"). Applicants respectfully traverse this rejection.

Abe discloses methods and dispensers which are used for filling liquid crystal into a LCD cell (Abstract). Specifically, the Office Action asserts, that Abe discloses a measuring device that is considered to correspond to the features recited in the claims.

Abe cannot reasonably be considered to disclose a measuring device which measures a quantity of the liquid material disposed on the substrate, nor does it teach that the discharge of the liquid material from the nozzle is stopped when the quantity of the liquid material disposed on the substrate reaches the specified quantity. Rather, Abe teaches that the quantity of a liquid crystal material discharged is controlled by controlling the weight of a single drop of the liquid crystal material and the number of the droplets being discharged. The Office Action refers to col. 2, lines 35-38 as allegedly disclosing the features recited in the pending claims. The cited references from Abe actually teaches "[t]he invention also provides a preferred mode of the above method using a liquid crystal dispenser able to release drop by drop and able to control the

quantity of one drop, which is performed controlling the number of drops." This disclosure of Abe is combined with the disclosure at col. 2, line 32-34 that the Abe device releases a "predetermined amount of liquid crystal from the dispenser onto the lower substrate" to explain the control of the material discharged.

As positively recited in independent claim 8, the subject matter of the pending claims teaches a measuring device which measures a quantity of the liquid material disposed on the substrate. The discharge of the liquid material from the nozzle is stopped when the quantity of the liquid material disposed on the substrate reaches the specified quantity. Abe expressly discloses that the measurement of a liquid material is made at the point of discharge, rather than measuring the amount disposed on the substrate and that the amount discharged is a predetermined amount rather than stopped when a specified quantity disposed on the substrate is measured. As such there is no measurement of a quantity of liquid disposed on the substrate nor does the discharge of the liquid material from the nozzle stop when the quantity of the liquid material disposed on the substrate is a specified quantity, but rather the discharge of the liquid material from the nozzle is stopped when a predetermined amount to be released from the nozzle is reached.

For at least the above reason, Abe cannot reasonably be considered to teach, or to have suggested, the combination of all of the features recited in independent claim 8. Further, claims 9-11 are also neither taught, nor would they have been suggested, by Abe for at least the respective dependence of these claims on independent claim 8, as well as for the separately patentable subject matter that each of these claims recites.

Applicants' representatives presented the above arguments during the March 22 personal interview. Examiner Nguyen indicated that it was his interpretation that the method of measurement disclosed by Abe, being made at the point of discharge from the nozzle, could reasonably be considered to correspond to measurement of the liquid material disposed on the

substrate, as positively recited in independent claim 8. This conclusion by the Examiner requires an unreasonably overly broad interpretation of the disclosure of Abe for at least the reasons discussed above. The Office Action fails to make a *prima facie* case for anticipation based on the applied prior art reference of Abe, at least as it is applied to the subject matter of claims 8-11.

Accordingly, reconsideration and withdrawal of the rejection of claims 8-11 under 35 U.S.C. §102(b) as being anticipated by Abe are respectfully requested.

The Office Action, in paragraph 2, rejects claims 1-5 under 35 U.S.C. §103(a) as being unpatentable over Abe in view of European Patent No. 994180 A1 to Mondin et al. (hereinafter "Mondin"). Applicants respectfully traverse this rejection.

The Office Action asserts that Abe teaches many of the combinations of features recited in claims 1-5. However, the Office Action concedes that Abe fails to disclose cleaning the nozzle and substrate with liquid crystal. The Office Action relies on Mondin to overcome this deficiency. Further, the Office Action asserts that it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a droplet discharge method for discharging a liquid material from the discharge device as Abe discloses with the liquid crystal being used to clean for the removing of oily and greasy soil as taught by Mondin.

First, as discussed previously, the quantity of the liquid material discharged, as taught by Abe, is controlled by controlling the weight of a single drop of the liquid crystal material and the number of the droplets being discharged. The same arguments that support allowability of claim 8, therefore, support the allowability of claim 1 because claim 1 recites the same features argued above.

Second, if a clogging is present in the nozzle, droplets of the liquid crystal may be blocked from coming out of the nozzle on the early stage of the discharge and a precise quantity of the liquid material may not be disposed onto the substrate although apparently they would have been commanded to be discharged from the Abe nozzle and apparently measured as having

been discharged. For example, when clogging of the liquid crystal occurs upon discharging on a first substrate, no liquid crystal may be disposed on the first substrate if no cleaning (i.e., flushing) is performed since the amount of the liquid material has been actually disposed is not monitored. The clogging may be eliminated upon the subsequent discharge on a second substrate and the liquid crystal clogged may be discharged onto this substrate. In this manner, if no cleaning (flushing) is performed, the amount of the discharged liquid crystal may be varied substrate to substrate.

Third, if flushing is performed prior to an actual discharge in order to eliminate the clogging, the liquid crystal material used for flushing is wasted. Neither Abe, nor Mondin, teach that liquid material used in any alleged cleaning step is disposed on the substrate, and the quantity of the liquid material disposed on the substrate in a cleaning step, and the quantity of the liquid material disposed on the substrate in a disposing step constitute the specified quantity.

As positively recited in independent claim 1, clogging of the nozzle is eliminated in the beginning of the discharge. In the cleaning step, at least a part of the liquid material used for eliminating the clogging remains disposed on a substrate and waste of the liquid material for eliminating the clogging is minimized. After the flushing is completed, droplets are discharged while controlling the amount of the liquid material that has been disposed on the substrate. In this manner, the subject matter of the pending claims can eliminate clogging in order to precisely dispose the liquid material on a substrate while minimizing waste of the liquid crystal during the cleaning step.

For at least these reasons, any permissible combination of Abe and Mondin cannot reasonably be considered to have suggested the combinations of all the features recited in at least independent claim 1. Because claim 3 recites the same features, the combination of references cannot reasonably be considered to teach or to have suggested the subject matter of that claim either. Further, claims 2, 4 and 5 would also not have been suggested by any permissible

combination of the applied references for at least the respective dependence of these claims directly on independent claims 1 and 3, as well as for the separately patentable subject matter that each of these claims recites.

Accordingly, reconsideration and withdrawal of the rejection of claims 1-5 under 35 U.S.C. §103(a) as being unpatentable over Abe in view of Mondin are respectfully requested.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-5 and 8-18 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,  
  
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